

We claim:

1. An improved auxiliary shelf mechanism for vertically and horizontally positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

an articulating arm mechanism comprising:

- (a) a mounting bracket, the mounting bracket having a front end and a back end, the front end being closer to the front of the desk than the back end;
- (b) an upper arm having a rear end and a front end, the upper arm being pivotally connected to the mounting bracket at a first point, the rear of the upper arm being defined as the end of the upper arm closest to the mounting bracket and the front end being defined as the end opposite the rear end point;
- (c) a shelf bracket pivotally connected to the upper arm at a second point;
- (d) a side arm having a front end and a rear end, the side arm being pivotally connected to the shelf bracket at a third point; the side arm being further attached to the mounting bracket at a fourth point; the side arm having within it a first opening such that the side arm can be pivoted relative to the mounting bracket about the fourth point and can be reciprocatingly moved relative to the fourth point; the front of the side arm being defined as the end closest to the third point, and the rear of the side arm being defined as the end opposite from the front;
- (e) a stopping means, the stopping means having a first side facing towards the rear of the side arm, such that when the side arm moves laterally relative to

the fourth point, the rear of the side arm can contact the first side of the stopping means;

wherein the side arm and the upper arm are not substantially parallel to each other.

2. The auxiliary shelf mechanism of claim 1, wherein the third point is disposed beneath the second point.
3. The auxiliary shelf mechanism of claim 1, wherein the fourth point is disposed beneath the first point.
4. The auxiliary shelf mechanism of claim 1, wherein the fourth point is disposed beneath the first point, and the third point is disposed beneath the second pivot point.
5. The auxiliary shelf mechanism of claim 1, wherein the first side of the stopping means is concave.
6. The auxiliary shelf mechanism of claim 1, wherein the distance between said first and fourth points is less than the distance between said second and third points.
7. The auxiliary shelf mechanism of claim 1, wherein the fourth point is disposed beneath the first point, and the third point is disposed beneath the second pivot point, and the first side of the stopping means is concave.
8. The auxiliary shelf mechanism of claim 1, wherein the articulating arm mechanism further comprises a lower arm, the lower arm being pivotally attached to the upper arm at a fifth point, the fifth point being disposed between the first arm second points, the lower arm being further attached to the mounting bracket at the fourth point, the lower arm further having within it a second opening, such that the lower arm can pivot about the fourth point and can be reciprocatingly moved relative to the fourth point.
9. The auxiliary shelf mechanism of claim 1, wherein the articulating arm mechanism

further comprises a second side arm and second stopping means, wherein the rear of said second side arm can contact the first side face of said second stopping means.

10. The auxiliary shelf mechanism of claim 9, wherein the two stopping means are connected to each other.

11. The auxiliary shelf mechanism of claim 1, wherein the position of the stopping means is adjustable between a first position and a second position, the first position being closer to the front end of the mounting bracket than the second position, and the second position being closer to the back end of the mounting bracket than the first position.

12. The auxiliary shelf mechanism of claim 11, wherein the position of the stopping means can be fixed at either the first position, or the second position, or at any position between the first and second positions.

13. The auxiliary shelf mechanism of claim 1, wherein the upper arm is connected to the mounting bracket by a first pivot rod at the first point, and to the shelf bracket by a second pivot rod at the second point, and further wherein the side arm is connected to the shelf bracket by a third pivot rod at the third point, and to the mounting bracket by a bolt at the fourth point.

14. The auxiliary shelf mechanism of claim 1 further comprising a fixing means for temporarily fixing the side arm to the mounting bracket.

15. The auxiliary shelf mechanism of claim 14, wherein the sidearm may be fixed into position relative to the mounting with a locking mechanism.

16. The auxiliary shelf mechanism of claim 15 further comprising a locking knob that fixes the position of the side arm relative to the mounting bracket.

17. The auxiliary shelf mechanism of claim 16, further comprising a stopping means

effective to apply friction between the rear end of the side arm and the first side of the stopping means.

18. The auxiliary shelf mechanism of claim 1, wherein the side arm is fixed into position by means of interaction between interconnecting projections on the rear end of the side arm and the first side of the stopping means.

19. The auxiliary shelf mechanism of claim 1, wherein said stopping means is attached to an inside face of the mounting bracket, and further wherein the first side of said stopping means is angled outwards towards the inside face of the mounting bracket to which the stopping means is attached.

20. The auxiliary shelf mechanism of claim 1, wherein the rear end of the side arm and the first side of the stopping means comprises a complementary series of interlocking teeth.

21. The auxiliary shelf mechanism of claim 5, wherein the rear end of the side arm consists of a side-arm cam pivotally connected to the rear end of the side arm, the side-arm cam having a convex face which complements the first side of the stopping means.

22. The auxiliary shelf mechanism of claim 1, wherein the articulating arm mechanism further comprises means for rotating it about a vertical axis.

23. The auxiliary shelf mechanism of claim 22, wherein the means for attaching the auxiliary shelf to a desk comprises a mounting track; the means for rotating the articulating arm mechanism relative to the desk comprises a swivel mechanism attached to the mounting bracket in combination with the mounting track to which the mounting bracket is slidably connected, either directly or indirectly.

24. The auxiliary shelf mechanism of claim 1, wherein the articulating arm mechanism

further comprises:

- (a) a second side arm;
- (b) a second stopping means; and further wherein;
- (c) the first side of each stopping means is concave;
- (d) each stopping means is attached to an inside side of the mounting bracket, and further wherein the first side of each stopping means is angled outwards towards the inside face of the mounting bracket to which each stopping means is attached so that the end of each side arm can contact a stopping means and an inside face of the mounting bracket simultaneously;
- (e) the fourth point is disposed beneath the first point, and the third point is disposed beneath the second point;
- (f) the articulating arm mechanism may be rotated relative to the desk by means of a swivel mechanism attached to the mounting bracket in combination with a mounting track to which the mounting bracket is slidably connected.

25. An articulating arm mechanism for connecting a shelf to a desk comprising:

- (a) a mounting bracket, the mounting bracket having a front end and a back end;
- (b) an upper arm having a rear end and a front end, said upper arm being pivotally connected to the mounting bracket at a first point, the rear of the upper arm being defined as the end of the upper arm closest to the mounting bracket and the front being defined as the end opposite the rear end;
- (c) a shelf bracket pivotally connected to the upper arm at a second point;
- (d) a side arm having a front end and a rear end, said side arm being pivotally connected to the shelf bracket at a third point; the side arm being further

attached to the mounting bracket at a fourth point; the side arm having within it a first opening such that the side arm can be pivoted relative to the mounting bracket about the fourth pivot point and can be reciprocatingly moved relative to the fourth point; the front of the side arm being defined as the end closest to the third point, and the rear of the side arm being defined as the end opposite from the front;

- (e) a stopping means, the stopping means having a first side facing towards the rear of the side arm, such that when the side arm moves laterally relative to the fourth point, the rear of the side arm can contact the first side of the stopping means;

wherein the side arm and the upper arm are substantially not parallel to each other.

26. The articulating arm mechanism of claim 25, wherein the third point is disposed beneath the second pivot point.

27. The articulating arm mechanism of claim 25, wherein the fourth point is disposed beneath the first pivot point.

28. The articulating arm mechanism of claim 25, wherein the fourth point is disposed beneath the first point, and the third point is disposed beneath the second point.

29. The articulating arm mechanism of claim 25, wherein the first side of the stopping means is concave.

30. The articulating arm mechanism of claim 25, wherein the distance between the first and fourth points is less than the distance between the second and third points.

31. The articulating arm mechanism of claim 25, wherein the articulating arm mechanism further comprises a lower arm, the lower arm being pivotally attached to the

upper arm at a fifth point, the fifth point being disposed between the first and second points, the lower arm being further attached to the mounting bracket at the fourth point, the lower arm further having within it a second opening, such that the lower arm can move about the fourth point both pivotally and reciprocatingly.

32. The articulating arm mechanism of claim 25, wherein the articulating arm mechanism has two side arms and two stopping means, wherein the rear of each sidearm can contact the first face of its corresponding stopping means.

33. The articulating arm mechanism of claim 32, wherein the two stopping means are connected to each other.

34. The articulating arm mechanism of claim 33, wherein at least one of the first sides of each stopping means is concave.

35. The articulating arm mechanism of claim 25, wherein the upper arm is connected to the mounting bracket by a first pivot rod and to the shelf bracket by a second pivot rod, and further wherein the side arm is connected to the shelf bracket by a third pivot rod and to the mounting bracket by a bolt.

36. The articulating arm mechanism of claim 25, further comprising a fixing means connecting the side arm to the mounting bracket.

37. The articulating arm mechanism of claim 36, wherein the side arm may be fixed into position with a locking means.

38. The articulating arm mechanism of claim 37, wherein the locking means is a locking knob.

39. The articulating arm mechanism of claim 25, wherein the side arm is fixed into position by means of friction between the end of the sidearm and the first face of stopping

means.

40. The articulating arm mechanism of claim 25, wherein the side arm is fixed into position by means of interaction between interconnecting projections on the end of the side arm and the first face of the stopping means.

41. The articulating arm mechanism of claim 25, wherein at least one stopping means is attached to an inside face of the mounting bracket, and further wherein the concave face of at least one stopping means is angled outwards towards the inside face of the mounting bracket to which the stopping means is attached.

42. The articulating arm mechanism of claim 25, wherein the rear end of the side arm and the concave face of the stopping means comprise complementary series of interlocking teeth.

43. The articulating arm mechanism of claim 29, wherein the rear end of the side arm consists of a side-arm cam pivotally connected to the end of the side arm, the side-arm cam having a convex face which complements the first face of the stopping means with which it comes in contact.

44. The articulating arm mechanism of claim 25, wherein the articulating arm mechanism further comprises a means for rotating it relative to the desk.

45. The articulating arm mechanism of claim 44, wherein the means for rotating it relative to the desk comprises a swivel mechanism attached to the mounting bracket.

46. The articulating arm mechanism of claim 25, wherein:

- (a) there are two side arms;
- (b) there are two stopping means, optionally connected to one another;
- (c) the first face of each stopping means is concave;



(d) each stopping means is attached to an inside face of the mounting bracket, and further wherein the first face of each stopping means is angled outward towards the inside face of the mounting bracket to which each stopping means is attached so that the end of each side arm can contact a stopping means and the inside face of the mounting bracket simultaneously

(e) the fourth point is disposed beneath the first point, and the third point is disposed beneath the second point; and

(f) the articulating arm mechanism may be rotated relative to the desk by means of a swivel mechanism attached to the mounting bracket in combination with a mounting track to which the mounting bracket is slidably connected, either directly or indirectly.

47. An articulating arm mechanism for connecting a shelf to a desk comprising:

(a) a mounting bracket, the mounting bracket having a front end and a back end, the front end being closer to the front of the desk than the back end;

(b) an upper arm pivotally connected to the mounting bracket at a first point, the rear of the upper arm being defined as the end of the upper arm closest to the mounting bracket;

(c) a shelf bracket pivotally connected to the upper arm at a second point; the front of the upper arm being defined as the end of the upper arm closest to the shelf bracket;

(d) a side arm pivotally connected to the shelf bracket at a third point; the side arm being further attached to the mounting bracket at a fourth point; the side arm having within it a first opening such that the side arm can be moved both

pivotedly and reciprocatingly about the fourth point; the front of the side arm being defined as the end closest to the third point, and the rear of the side arm being defined as the end opposite from the front;

(e) a stopping means, the stopping means having a first side facing towards the rear of the side arm, such that when the side arm moves horizontally relative to the fourth point, the rear of the side arm can contact the first side of the stopping means;

wherein the side arm and the upper arm are not parallel to each other; and further wherein the position of the stopping means are such that regardless of the angle of the side arm to the horizon, the angle of the shelf bracket relative to horizontal remains constant.

48. An improved auxiliary shelf mechanism including an auxiliary shelf having a top surface and a bottom surface, and a linkage to attached the auxiliary shelf to a desk so that the auxiliary shelf may be moved horizontally and/or vertically relative to the desk, wherein the improvement comprises:

- a. attaching the linkage to the auxiliary shelf at a substantially interior point of said auxiliary shelf; and
- b. attaching the linkage to the auxiliary shelf so that there is a linkage-auxiliary shelf connection point above the top surface of the auxiliary shelf.

49. The auxiliary shelf mechanism of claim 48, wherein the linkage is a parallelogram linkage.

50. A mechanism for mounting a support for an art device on a base, comprising:

- (1) a mounting member for attachment to said base;

(2) a linkage having a first end for mounting said support and a second end pivotally connected to said mounting member for permitting vertical movement of said support relative to said mounting member between lower and upper positions, said linkage including:

- (i) an upper link;
- (ii) a lower link;
- (iii) a first end link attached to said support;
- (iv) a second end link for attachment to said base;
- (v) a plurality of pin joints; and
- (vi) a crank and slider type joint;

wherein one of said upper and lower links is coupled to said first and second end links by pin joints at each end and the other of said upper and lower links is coupled to said first and second end links at one end by a pin joint and at the other end by said crank and slider joint; and

(3) a stopping means for releasably restraining said support in a desired position intermediate to said lower and upper positions comprising:

- (i) an extension of said link having a crank and slider joint having a first engagement surface; and
- (ii) a second engagement surface affixed to either said base or support.

51. A mechanism according to claim 50, wherein said first and second engagement surfaces frictionally engage.

52. A mechanism according to claim 50, wherein said first and second surfaces are serrated.

53. A mechanism according to claim 50, wherein said link having a crank and slider joint is said lower link.

54. A mechanism according to claim 53, wherein a coil spring is carried by the pin joint coupling said upper link to said second end link and has opposite ends arranged to engage said upper link and said mounting member.

55. A mechanism according to claim 53, wherein the force of gravity tends to swing said linkage downwardly about the pin joint coupling said upper link to said second end link to force said first engagement surface into engagement with said second engagement surface.

56. A mechanism according to claim 50 in which said art device consists essentially of a keyboard.

57. An improved auxiliary shelf mechanism for positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

an articulating arm mechanism comprising:

a) a mounting bracket, the mounting bracket having a front end and a back end;

b) a first arm having a rear portion and a front portion, the rear portion of the first arm being pivotally connected to the mounting bracket;

- c) a shelf bracket connected to the front portion of the first arm;
- d) a second arm having a front portion and a rear portion, the front portion of the second arm is pivotally connected to the shelf bracket and the rear portion of the second arm being slidably connected to the mounting bracket; and
- e) a stopping surface associated with the mounting bracket such that movement of the second arm is restricted when the second arm is translated;

wherein the first and second arms are not parallel to each other.

58. The auxiliary shelf mechanism of claim 57, wherein the first arm being connected to the mounting bracket by a first pivot and to the shelf bracket by a second pivot and further wherein the second arm is connected to the shelf bracket by a third pivot and to the mounting bracket by a sliding joint.

59. The auxiliary shelf mechanism of claim 57, wherein movement of the second arm is restricted by friction between the rear portion of the second arm and the stopping surface.

60. The auxiliary shelf mechanism of claim 57, wherein the second arm is fixed into position by engaging interconnecting projections on the rear portion of the second arm and the stopping surface.

61. The auxiliary shelf mechanism of claim 57, wherein the rear portion of the second arm and the stopping member comprise complementary series of interlocking teeth.

62. The auxiliary shelf mechanism of claim 57, wherein the articulating arm mechanism further comprises means for rotating said mechanism relative to the desk.

63. The auxiliary shelf mechanism of claim 57, wherein the means for attaching the auxiliary shelf to the desk comprises a mounting track; a means for rotating the articulating arm mechanism relative to the desk comprises a swivel mechanism attached

to the mounting bracket in combination with the mounting track to which the mounting bracket is slidably connected.

64. The auxiliary shelf mechanism of claim 57, further comprising a spring for biasing either the first or second arm.

65. An improved auxiliary shelf mechanism for positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

an articulating arm mechanism comprising:

(a) a mounting bracket, the mounting bracket having a front end and a back end;

(b) a first arm having a rear portion and a front portion, the rear portion of the first arm being pivotally connected to the mounting bracket;

(c) a shelf bracket having a shelving surface for supporting an auxiliary shelf thereon, the shelf bracket being away from the outer side edges of said shelving surface and being pivotally connected to the front portion of the first arm by at least one pivot positioned above the shelving surface;

(d) a second arm having a front portion and a rear portion, the front portion of the second arm being pivotally connected to the shelf bracket and the rear portion of the second arm being connected to the mounting bracket; and

(e) a stopping surface being associated with the mounting bracket such that movement of the second arm is restricted when the second arm is translated.

66. The auxiliary shelf mechanism of claim 65, wherein the first arm is connected to the mounting bracket by a first pivot and to the shelf bracket by a second pivot and further

wherein the second arm is connected to the shelf bracket by a third pivot and to the mounting bracket by a sliding joint.

67. The auxiliary shelf mechanism of claim 65, wherein movement of the second arm is restricted by friction between the rear portion of the second arm and the stopping surface.

68. The auxiliary shelf mechanism of claim 65, wherein the second arm is fixed into position by engaging interconnecting projections on the rear portion of the second arm and the stopping surface.

69. The auxiliary shelf mechanism of claim 65, wherein the rear portion of the second arm and the stopping surface comprise complementary series of interlocking teeth.

70. The auxiliary shelf mechanism of claim 65, wherein the articulating arm mechanism further comprises means for rotating said mechanism relative to the desk.

71. The auxiliary shelf mechanism of claim 65, wherein the means for attaching the auxiliary shelf to the desk comprises a mounting track; a means for rotating the articulating arm mechanism relative to the desk comprises a swivel mechanism attached to the mounting bracket in combination with the mounting track to which the mounting bracket is slidably connected.

72. The auxiliary shelf mechanism of claim 65, wherein the first and second arms are not parallel to each other.

73. The auxiliary shelf mechanism of claim 65, wherein the first and second arms are parallel to each other.

74. The auxiliary shelf mechanism of claim 65, further comprising a spring for biasing either the first or second arms.

75. An improved auxiliary shelf mechanism for positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

an articulating arm mechanism comprising:

(a) a mounting bracket, the mounting bracket having a front end and a back end;

(b) a first arm having a rear portion and a front portion, the rear portion of the first arm being pivotally connected to the mounting bracket;

(c) a shelf bracket having a shelving surface for positioning a keyboard on top thereof, the shelf bracket being pivotally connected to the front portion of the first arm by at least one pivot positioned above the shelving surface;

(d) a second arm having a front portion and a rear portion, the front portion of the second arm being pivotally connected to the shelf bracket and the rear portion of the second arm being connected to the mounting bracket;

(e) a stopping surface being associated with the mounting bracket such that movement of the second arm is restricted by the stopping surface when the second arm is translated;

(f) said means for attaching the auxiliary shelf to the desk comprises a mounting track; a swivel mechanism associated with the mounting bracket for rotating the articulating arm mechanism relative to the desk; the swivel mechanism positioned in combination with the mounting track to which the mounting bracket is slidably connected; and

(g) a spring for biasing the first or second arm.



76. The auxiliary shelf mechanism of claim 75, wherein the first arm being connected to the mounting bracket by a first pivot and to the shelf bracket by a second pivot and further wherein the second arm is connected to the shelf bracket by a third pivot and to the mounting bracket by a fourth pivot.

77. An improved auxiliary shelf mechanism for positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

- (a) an articulating arm mechanism comprising:
  - a) a mounting bracket, the mounting bracket having a front end and a back end;
  - b) a first arm having a rear portion and a front portion, the rear portion of the first arm being pivotally connected to the mounting bracket;
  - c) a shelf bracket pivotally connected to the front portion of the first arm;
  - d) a second arm having a front portion and a rear portion, the front portion of the second arm being pivotally connected to the shelf bracket and the rear portion of the second arm being connected to the mounting bracket;
  - e) a stopping surface being associated with the mounting bracket such that movement of the second arm is restricted by the stopping surface when the second arm is translated;
  - f) said means for attaching the auxiliary shelf to a desk comprises a mounting track; a means for rotating the articulating arm mechanism relative to the desk

comprises a swivel mechanism attached to the mounting bracket in combination with the mounting track to which the mounting bracket is slidably connected; and

g) a spring for biasing the first or second arms;

wherein the first and second arms are not parallel to each other.

78. The auxiliary shelf mechanism of claim 77, wherein the first arm being connected to the shelf bracket by a first pivot rod and the second arm is connected to the shelf bracket by a second pivot rod.

79. The auxiliary shelf mechanism of claim 77, wherein movement of the second arm being restricted into position by friction between the rear portion of the second arm and the stopping surface.

80. An improved auxiliary shelf mechanism for positioning an auxiliary shelf, including a means for attaching the auxiliary shelf to a desk so that the auxiliary shelf may be movably positioned relative to the desk, wherein the improvement comprises:

an articulating arm mechanism comprising:

(a) a mounting bracket, the mounting bracket having a front end and a back end;

(b) a first arm having a rear portion and a front portion, the rear portion of the first arm being pivotally connected to the mounting bracket;

(c) a shelf bracket having a shelving surface for positioning a keyboard on top thereof, the shelf bracket being pivotally connected to the front portion of the first arm by at least one pivot positioned above the shelving surface;

(d) a second arm having a front portion and a rear portion, the front portion of the second arm being pivotally connected to the shelf bracket and the rear portion of the second arm being connected to the mounting bracket;

(e) a stopping surface associated with the mounting bracket such that movement of the second arm is restricted by the stopping surface when the second arm is translated;

(f) said means for attaching the auxiliary shelf to a desk comprises a mounting track; a swivel mechanism associated with the mounting bracket for rotating the articulating arm mechanism relative to the desk; the swivel mechanism positioned in combination with the mounting track to which the mounting bracket is slidably connected; and

(g) a spring for biasing either the first or second arm;

wherein the first and second arms are not parallel to each other.

81. The auxiliary shelf mechanism of claim 80, wherein the first arm is connected to the mounting bracket by a first pivot rod and to the shelf bracket by a second pivot rod and further wherein the second arm is connected to the shelf bracket by a third pivot rod.

82. The auxiliary shelf mechanism of claim 80, wherein movement of the second arm is restricted by friction between the rear portion of the second arm and the stopping surface.

83. An improved auxiliary shelf mechanism for positioning an auxiliary shelf; said mechanism including at least two linkage arms connecting a mounting bracket capable of being connected to a desk and an auxiliary shelf bracket having a shelving surface for an auxiliary shelf wherein the improvement comprises (a) positioning said linkage arm - auxiliary shelf bracket connection away from either of the lateral edges of said auxiliary

shelf and (b) having at least one pivot connection between one of said linkage arms and the shelf bracket above the shelving surface.

84. A computer support arm assembly comprising, in combination:

- (i) a first bracket member for attachment to a work support;
- (ii) a second bracket member for support of a keyboard;
- (iii) a first linkage arm pivotally connected to the first bracket member at one end and to the second bracket member at its opposite end;
- (iv) a second linkage arm pivotally connected to the first bracket member at one end and to the second bracket member at its opposite end, for pivotal movement about an axis said second linkage member further connectable to the first linkage member along an elongated connection path corresponding to the pivot connection of the second linkage member to the second bracket member; and
- (v) a locking mechanism including a wedge block on the second bracket member for at least partially frictionally engaging the linkage members and second bracket member simultaneously to retain the second bracket member in a fixed orientation, said locking mechanism comprising a surface of the second bracket member inclined with respect to the axis and an opposed inclined surface of the wedge block supported on the second bracket member, said inclined surfaces slidable with respect to each other to lock or release the locking mechanism.

85. The combination of claim 1 wherein the second arm includes a pivot pin at the end connected to the first arm, said first arm including an arcuate guide slot for receipt of the pin, one of said pin or said second bracket member further including said wedge member for engagement with the other to lock the arms when the second bracket member is rotated about the axis connecting the second bracket member and first arm.

86. An improved auxiliary shelf mechanism including an auxiliary shelf having a top surface, a bottom surface, and two side edges, and a linkage to attached the auxiliary shelf to a desk so that the auxiliary shelf may be moved horizontally and/or vertically relative to the desk, wherein the improvement comprises attaching the linkage to the auxiliary shelf:

- (a) substantially away from the side edges of said auxiliary shelf; and
- (b) the connection points of said linkage to said auxiliary shelf mechanism are substantially above the bottom surface of the auxiliary shelf.

87. The improved auxiliary shelf mechanism of claim 86 in which said linkage attaches to said auxiliary shelf near the middle of said shelf.

88. A computer support arm assembly comprising, in combination:

- (a) a first bracket member for attachment to a work support;
- (b) a second bracket member for support of a keyboard;
- (c) a first linkage arm pivotally connected to the first bracket member at one end and to the second bracket member at its opposite end;
- (d) a second linkage arm pivotally connected to the first bracket member at one end and to the second bracket member at its opposite end, for pivotal movement about an axis said second linkage member further connectable to the first

linkage member along an elongated connection path corresponding to the pivot connection of the second linkage member to the second bracket member; and

(e) a locking mechanism including a wedge block on the second bracket member for at least partially frictionally engaging the linkage members and second bracket member simultaneously to retain the second bracket member in a fixed orientation, said locking mechanism comprising a surface of the second bracket member inclined with respect to the axis and an opposed inclined surface of the wedge block supported on the second bracket member, said inclined surfaces slidable with respect to each other to lock or release the locking mechanism.

89. A support arm assembly for a computer keyboard mounted on a work support comprising, in combination: a first bracket member for attachment to a work support; a second bracket member for attachment to a keyboard; a first arm with opposite ends pivotally connected at to the first bracket and member and second bracket member respectively; a second arm with opposite ends pivotally connected to the first bracket member and the second bracket member respectively; one of said pivotal connections of the second arm to one of the first and second bracket members including first and second slidably engaged wedge members affixed respectively to the said one of said bracket members and to the second arm, said first and second wedge members slidably engaged and having a first locked position compressing the bracket member and second arm together and a second unlocking position releasing compression of the bracket member and second arm.

90. An improved auxiliary shelf mechanism for positioning an auxiliary shelf; said mechanism including at least two linkage arms connecting a mounting bracket capable of

being connected to a desk and an auxiliary shelf bracket having a shelving surface for an auxiliary shelf, wherein the improvement comprises having a non-parallelogram linkage with at least one pivot connection between one of said linkage arms and the shelf bracket above the shelving surface.

91. A mounting mechanism for mounting a support for an art device on a base, comprising:

(a) a mounting member for attachment to said base;

(b) a linkage having a first end for mounting said support and a second end pivotally connected to said mounting member for permitting vertical swinging movement of said support relative to said mounting member between lower and upper positions,

(i) said linkage including an upper link, a lower link, a first end link, and first, second, and third pivot connections having parallel axes, wherein

(1) said upper link has opposite ends pivotally coupled to said first end link and said mounting member by said first and second pivot connections;

(2) one end of said lower link is pivotally coupled to said first end link by said third pivot connections, and

(3) said second end of said linkage is pivotally connected to said mounting member solely by said second pivot connection;

(ii) said linkage being a non-parallelogram linkage, and

(c) a stopping means for releasably restraining said support in a desired position intermediate said lower and upper positions,

(i) said stopping means including a first engagement surface on said linkage and a second engagement surface of said mounting member, said first engagement surface being normally gravitationally biased into engagement with said second engagement surface for releasably restraining said support against downwardly directed vertical swinging movement, and

(ii) said first engagement surface is released from engagement with said second engagement surface by applying an upwardly directed manual force to said support.

92. An improved auxiliary shelf mechanism including an auxiliary shelf having a top surface and a bottom surface, and a linkage to attached the auxiliary shelf to a desk so that the auxiliary shelf may be moved relative to the desk, wherein the improvement comprises attaching the linkage to the auxiliary shelf:

(a) at a substantially centralized point of said auxiliary shelf; and

(b) above the bottom surface of the auxiliary shelf.

93. The improved auxiliary shelf mechanism of claim 83 in which said linkage is a non-parallelogram linkage.

94. The improved auxiliary shelf mechanism of claim 47 in which said linkage comprises an elongated downwardly opening channel-shaped member.



95. Apparatus for movably supporting a keyboard with respect to a workstation comprising:

- a) a keyboard support member having a generally planar keyboard support surface whose orientation is controlled with respect to a work surface of said workstation; said keyboard support member comprising two side pieces spaced apart by a center section, said side pieces defining aligned slots on opposite sides of the center section;
- b) a workstation engaging member that supports the keyboard for back and forth movement with respect to the workstation to allow the keyboard to be stored in a storage position and be moved to an in use position;
- c) a linkage for adjusting a relative position of the keyboard engaging member with respect to the workstation engaging member; and
- d) wherein said workstation engaging member comprises:
  - i) a housing supporting a track defining a generally linear travel path; and
  - ii) a keyboard support carriage for movement along the track.

96. The apparatus of claim 95 wherein the linkage comprises first and second linkage arms pivotally supported at spaced apart locations so that the first and second linkage arms pivot independently from each other during height and orientation adjustment of the keyboard with respect to the workstation.

97. The apparatus of claim 95 in which said linkage comprises a bar connecting said keyboard support carriage and said keyboard support member, said apparatus further comprising:

a stopping means comprising:

- i) a first engagement surface on said bar connecting said keyboard support carriage and said keyboard support member; and
- ii) a second engagement surface for angular frictional engagement with said first engagement surface.

98. Apparatus for movably supporting a keyboard with respect to a workstation comprising:

- a) a keyboard support member having a generally planar keyboard support surface whose orientation is controlled with respect to a work surface of said workstation; said keyboard support member comprising two side pieces above, and at substantially interior, but spaced, points on said keyboard support member, said side pieces defining aligned slots on opposite sides of the center section;
- b) a workstation engaging member that supports the keyboard for back and forth movement with respect to the workstation to allow the keyboard to be stored in a storage position and be moved to an in use position;
- c) a linkage for adjusting a relative position of the keyboard engaging member with respect to the workstation engaging member; and
- d) wherein said workstation engaging member comprises:
  - i) a housing supporting a track defining a generally linear travel path; and
  - ii) a keyboard support carriage for movement along the track.

99. Apparatus for movably supporting a keyboard with respect to a workstation comprising:

- a) a keyboard engaging member having a generally planar keyboard support surface whose orientation is controlled to control an orientation of the keyboard with respect to a work surface of said workstation; said keyboard engaging member comprising two parallel side pieces spaced apart by a center section, said side pieces defining aligned slots on opposite sides of the center section;
- b) a workstation engaging member that supports the keyboard for back and forth movement with respect to the workstation to allow the keyboard to be stored in a storage position and be moved to an in use position; and
- c) a linkage for adjusting a relative position of the keyboard engaging member with respect to the workstation engaging member, the linkage comprising:
  - i) an engagement surface on at least one end of said linkage;
  - ii) a wedge member mounted for operable engagement with said linkage engagement surface; and
- d) wherein said workstation engaging member comprises:
  - i) at least one horizontally oriented track in which said linkage may ride; and
  - ii) a keyboard support carriage supported by the ball bearing slide and movable along the slide.

100. Apparatus for movably supporting a keyboard with respect to a workstation comprising:

- a) a keyboard support member having a generally planar keyboard support surface whose orientation is controlled with respect to a work surface of said workstation; said keyboard support member comprising two side pieces above, and at substantially interior, but spaced, points on said keyboard support member, said side pieces defining aligned slots on opposite sides of the center section;
- b) a workstation engaging member that supports the keyboard for back and forth movement with respect to the workstation to allow the keyboard to be stored in a storage position and be moved to an in use position; and
- c) a linkage for adjusting a relative position of the keyboard engaging member with respect to the workstation engaging member, the linkage comprising:
  - i) an engagement surface on at least one end of said linkage;
  - ii) a wedge member mounted for operable engagement with said linkage engagement surface; and
- d) wherein said workstation engaging member comprises:
  - i) at least one horizontally oriented track in which said linkage may ride; and
  - ii) a keyboard support carriage supported by the ball bearing slide and movable along the slide.